1.   A method for media access control in a communication network which includes a plurality of communication stations which communicate over a shared communication medium and which supports a quality of service class of communication sessions such that sessions in that class have data rate requirements, comprising:

assigning communication resources in accordance with the data rate requirements of a plurality of sessions in the quality of service class;

polling the stations to transmit data over the shared communication medium for particular ones of the plurality of sessions according to a polling sequence;

monitoring data transmitted by the stations in response to the polling; and

adaptively allocating the communication resources in accordance with the monitored data transmissions.

2.   The method of claim 1 wherein adaptively allocating the communication resources includes adapting the polling sequence.

3.   The method of claim 2 further comprising:

accepting a request to establish a new communication session in the quality of service class;

admitting the new session if its data rate requirement can be provided without exceeding a limit on available communication capacity on the shared communication medium; and

rejecting the new session if its data rate requirement cannot be provided without exceeding the limit on available communication resources.

4.   The method of claim 2 wherein the data rate requirements include minimum required and a maximum desired data rates for the plurality of sessions in the quality of service class.

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5.   The method of claim 2 wherein the data rate requirements includes required maximum intervals between polling of the plurality of sessions in the quality of service class.

6.   The method of claim 4 wherein assigning communication resources includes:

determining a subset of the plurality of sessions in the quality of service class that can be provided with their minimum required data rate; and

assigning data rates to each of the subset of sessions in accordance with their minimum required data rates and their maximum desired data rates.

7.   The method of claim 6 wherein monitoring data transmission includes collecting data retransmission statistics, and assigning communication resources includes adjusting data rate requirements in accordance with the collected retransmission statistics.

8.   Then method of claim 4 wherein assigning communication resources includes optimizing a utility function subject to a set of constraints.

9.   The method of claim 8 wherein the utility function depends on the assigned rates, and the set of constraints includes the assigned rate for each admitted session being in a range from its minimum required data rate to its maximum desired data rate and the assigned data rates taken together not exceeding an available communication capacity.

10.   The method of claim 2 wherein polling the stations includes:

polling sessions with lower assigned data rates less frequently than stations with higher assigned data rates.

11. The method of claim 2 wherein adapting the polling sequence includes:

reducing the rate of polling for a session in response the monitored transmissions for that session corresponding to a reduction in actual rate of transmission for that session; and

increasing the rate of polling for a session in response the monitored transmissions for that session corresponding to an increase in actual rate of transmission for that session.

12. The method of claim 2 wherein polling is performed in a periodic cycle and during each period of the cycle a subset of the sessions in the quality of service class are polled in accordance with their allocated communication resources.

13. The method of claim 12 wherein the polling sequence is determined by the values of a plurality of state variables, each associated with a corresponding session, and adapting the polling sequence is effected by changing the values of the state variable.

14. The method of claim 1 wherein polling the stations to transmit data for particular ones of the sessions includes:

assembling a data message identifying at least one of the sessions; and

transmitting the data message to one of the stations using a wireless transmitter;

and wherein monitoring data transmissions includes receiving the data transmissions using a wireless receiver.

15. An apparatus for controlling a plurality of stations configured to communicate over a shared communication medium in a communication network comprising:

means for assigning communication resources in accordance the data rate requirements of a plurality of sessions;

means for polling the stations to transmit data over the shared communication medium for particular ones of the sessions according to a polling sequence;

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means for monitoring data transmissions in response to the polling; and

means for adapting the polling sequence in accordance with the assigned communication resources and the monitored data transmissions.

16. The apparatus of claim 15 further comprising:

means for accepting a request to establish a new communication session over the shared communication medium;

means for admitting the new session if its data rate requirement can be provided without exceeding a limit on available communication resources; and

means for rejecting the new session if its data rate requirement cannot be provided without exceeding the limit on available communication resources.

17. Software stored in a computer readable medium for causing a computer to perform the functions:

assigning communication resources to a set of communication sessions in accordance with data rate requirements of the sessions;

polling stations to transmit data for particular ones of the sessions according to a polling sequence;

monitoring data transmissions in response to the polling; and

adaptively allocating the communication resources in accordance with the monitored data transmissions.

18. The software of claim 17 wherein allocating the communication resources includes adapting the polling sequence.

19. The software of claim 18 further causing the computer to perform the functions of:

accepting a request to establish a new communication session;

admitting the new session if its data rate requirement can be provided without exceeding a limit on available communication resources; and

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rejecting the new session if its data rate requirement cannot be provided without exceeding the limit on available communication resources.

20. The software of claim 18 wherein a data rate requirement for a session includes a minimum required and a maximum desired data rate.

21. An apparatus for polling a plurality of stations configured to communicate over a shared communication medium in a communication network comprising:

a polling manager which sends polling messages to the stations in the network in accordance with a polling sequence;

a transmitter which accepts polling messages from the polling manager and transmits the messages over the shared communication medium to the stations; and

a receiver which receives messages over the shared communication medium from the stations and provides monitoring information to the polling manager;

wherein the polling manager adapts the polling sequence in accordance with the monitoring information.

22. The apparatus of claim 21 further comprising a resource manager which accepts requests to admit communication sessions and provides resource allocations for admitted sessions to the polling manager.

23. The apparatus of claim 22 further comprising a plurality of state indices associated with corresponding admitted sessions, and wherein the polling manager initializes the state indices in accordance with the resource allocations, updates the state indices in accordance with the monitoring information, and determines the polling sequence in accordance with the state indices.